

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Article 36 and Rule 70)

REC'D. 08 FEB 2005

W/RO PCT

Applicant's or agent's file reference 10477P1 WO/ED	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/GB 03/04793	International filing date (<i>day/month/year</i>) 06.11.2003	Priority date (<i>day/month/year</i>) 09.11.2002
International Patent Classification (IPC) or both national classification and IPC A61L9/12		
Applicant RECKITT BENCKISER (UK) LIMITED et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 6 sheets.

3. This report contains indications relating to the following items:

I ☒ Basis of the opinion

II ☐ Priority

III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

IV ☐ Lack of unity of invention

V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

VI ☐ Certain documents cited

VII ☐ Certain defects in the international application

VIII ☐ Certain observations on the international application

Date of submission of the demand 07.06.2004	Date of completion of this report 04.02.2005
Name and mailing address of the international preliminary examining authority: <div style="display: flex; align-items: center;"> <div> European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465 </div> </div>	Authorized Officer Marti, P Telephone No. +49 89 2399-7858



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/GB 03/04793**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

2-16 as originally filed
1, 1a received on 27.10.2004 with letter of 22.10.2004

Claims, Numbers

8-17 received on 27.10.2004 with letter of 22.10.2004
1-7 received on 13.12.2004 with letter of 10.12.2004

Drawings, Sheets

1/3-3/3 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
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International application No. **PCT/GB 03/04793**

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-17
	No: Claims	
Inventive step (IS)	Yes: Claims	1-17
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-17
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1.1 Reference is made to the following documents:

D1: US-A-5 139 864

D2: EP-A-0 348 970

D3: US-A-6 129 771

1.2 Document D1, which is considered as the closest prior art, discloses a multi-layered, multifunctional volatilisable substance delivery article, wherein the article is constructed to deliver sequentially a plurality of agents.

The article comprises a first phase comprising a first vaporisable agent (= islands or holes which contain perfume material, see 19 in Fig. 1), a second phase comprising a second vaporisable material (= second perfumery material contained in microporous polymer particles, 14), and a third phase which constitutes a barrier between the first and second phases (= gel layer, 18). Vaporisation of the second agent commences after the first agent has commenced to vaporise.

Document D2 discloses a multi-laminate fragrance release device. The device comprises a first solid phase (see page 10, lines 7-10, and 10B in Fig. 16), a second phase (16B'') and a third phase (16B') which constitutes a barrier between the first and second phases. If first and second phases are placed in contact for a sufficient period of time, at least one component thereof would migrate into the other phase. Vaporisation of the second phase can only start after vaporisation of the third phase is complete.

Document D3 discloses a candle in which multiple layers of mineral oil based gel are poured in selective layer patterns. The candle shown in Fig. 4 comprises a first phase (56), a second phase (52) and a third phase (54) constituting a barrier between the first and second phases. Also in this device vaporisation of the second phase can only start after vaporisation of the third phase is complete.

1.3 Neither D1 nor D2 nor D3 discloses that first and second phases should be separated by a partition wall which terminates above the bottom of the enclosure and extends into the third phase, or two upright limbs, as defined in claim 1 and 2, respectively.

Therefore, the subject-matter of claim 1 and 2 can be considered as novel (Art. 33.2 PCT). The same applies to claim 15.

2. The essence of the invention resides in the movement of the third phase and, particularly, of the second phase to produce a sudden increase of the vapour pressure of the second vaporisable agent after vaporisation of the first phase.

The objective technical problem to be solved by the present invention with respect to D1 is that of releasing two separate vapours at different times while minimising the overlap time during which both vapours are present in the atmosphere. This problem is solved by the invention in that third phase moves out of the way of the second phase once the first phase is exhausted.

None of the cited documents mentions or teaches the use of a hydrostatic or movement mechanism of the third phase on order to provide the release of the second phase after the first phase has become exhausted or partially exhausted.

Consequently, the subject-matter of the claims is inventive (Art. 33.3 PCT).

Re Item VIII

Certain observations on the international application

1. The claims are not fully supported by the description (Art. 6 PCT).

CLAIMS

1. An article for the release of a plurality of vapours, the article containing:

5 a first liquid or solid phase (12) comprising a first vaporisable agent;

a second liquid or solid phase (14) comprising a second vaporisable agent;

10 and a third phase (10) which constitutes a barrier between the first (12) and second (14) phases;

wherein the first (12) and second (14) phases are such that if placed in contact with each other one phase or one or more component thereof would mix or migrate into the other phase wherein the article comprises an enclosure (2) having a partition wall (8) between the first phase (12) and the second phase (14) at the commencement of use of the article, the partition wall terminating above the bottom wall of the enclosure (14) the third phase (10) being at the bottom of the enclosure, wherein the lower edge of the partition wall extends into the third phase at the commencement of use of the article;

20 wherein the commencement of vaporisation of the second phase is delayed by the third phase and wherein when the first phase has issued from the article in use, the third phase is exposed to the air and can shrink whereby the second phase can flow around the third phase and then evaporate from the article.

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2. An article for the release of a plurality of vapours, the article containing:

a first liquid or solid phase (66) comprising a first vaporisable agent;

30 a second liquid or solid phase (68) comprising a second vaporisable agent;

and a third phase (70) which constitutes a barrier between the first (66) and second (68) phases;

wherein the first (66) and second (68) phases are such that if placed in contact
5 with each other one phase or one or more component thereof would mix or
migrate into the other phase wherein the article comprises an enclosure
having two upright limbs (60, 62) connected together, wherein at the
commencement of use the first phase (66) is located in one limb (60) the
second phase (68) is located in the other limb (62) and the third phase (70) is
10 located therebetween such that commencement of the vaporisation of the
second phase is delayed by the third phase;

such that, in use, initially vaporisation of the first agent commences, and
subsequently vaporisation of the second agent commences, the
15 commencement of vaporisation of the second agent being delayed by the third
phase (70).

3. An article as claimed in claim 1 or 2, wherein the first phase is adapted to
evaporate substantially completely.

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4. An article as claimed in any preceding claim, wherein the second phase
is adapted to evaporate substantially completely.

5. An article as claimed in any preceding claim, wherein the first phase is a
25 liquid.

6. An article as claimed in any of claims 1 to 4, wherein the first phase is a
gel.

30 7. An article as claimed in any preceding claim wherein the second phase is
a liquid.

8. An article as claimed in any of claims 1 to 6, wherein the second phase is a gel.
9. An article as claimed in any preceding claim, wherein the third phase is a liquid.
10. An article as claimed in any of claims 1 to 8, wherein the third phase is a gel.
11. An article as claimed in any preceding claim, wherein at least one of the first and second phases comprises as an evaporable agent a fragrance.
12. An article as claimed in any of claims 1 to 10 wherein at least one of the first and second phases comprises as an evaporable agent a compound selected from an insecticide, insect repellent, miticide or anti-allergenic compound.
13. An article as claimed in any preceding claim where the third phase comprises a third evaporable agent.
14. A composition as claimed in any preceding claim wherein the third phase is a liquid or gel whose volume reduces when exposed to air.
15. A method of dispensing at least two active agents, using an article as claimed in any preceding claim, wherein the commencement of evaporation of the first evaporable agent precedes the commencement of evaporation of the second evaporable agent.
16. A method as claimed in claim 15 wherein evaporation of the second evaporable agent commences substantially at the point at which evaporation of the first evaporable agent is complete.

17. A method as claimed in claim 15, wherein evaporation of the second evaporable agent commences before evaporation of the first evaporable agent is complete.

IMPROVEMENTS IN OR RELATING TO ARTICLES

This invention relates to articles for the release of vapours.

5 It would be desirable to provide one article which could emit more than one vapour, for example fragrance or other active agent, automatically and in a sequential manner.

10 US 5, 139, 864 discloses multi-layer, multi-functional delivery articles for volatalizable substances which are constructed to deliver volatalizable substances in sequentially timed fashion to the environment surrounding the article.

15 EP 0348970 discloses a multi-laminate sustained release device capable of releasing fragrances, colognes and perfumes at a controlled rate for a prolonged period of time.

20 US 6, 129, 771 discloses a multi-layer gel candle in which multiple layers of mineral oil-based gel are present in selective layer patterns.

 In accordance with a first aspect of the present invention there is provided an article for the release of a plurality of vapours, the article containing:

25 a first liquid or solid phase comprising a first vaporisable agent;

 a second liquid or solid phase comprising a second vaporisable agent;

30 and a third phase which constitutes a barrier between the first and second phases;

1a

wherein the first and second phases are such that if placed in contact with each other one phase or one or more component thereof would mix or migrate into the other phase;

- 5 and wherein the article is such that, in use, initially vaporisation of the first agent commences, and subsequently vaporisation of the second agent commences, the commencement of vaporisation of the second agent being delayed by the third phase.

- 10 The article of the present invention is useful when it is wished to release different vapours, or a different blend of vapours, at different times. When the vapours are fragrances this may help to avoid "nasal attenuation" (anosmia) of a user - the process by which the user becomes so accustomed to a single